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ADP PLANNING CONFERENCE RECOMMENDATIONS

IAC Panel Session June 15, 1976

By

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#### INTRODUCTION

I will provide today some comments on the recommendations set forth at the Airlie House Conference. I want to commend all of you who participated in that Conference. This Conference concentrated considerable expertise in one place which hopefully will be of benefit in resolving the issues addressed at the Conference. The open discussion that you held at Airlie House and are continuing in your meetings and in this present session, is a hallmark of open government. It is representative of the true spirit of the Brooks Act and its intent in how the Federal government could operate.

Specifically, I will address only the five areas pertaining to the National Bureau of Standards (NBS). These areas are:

- 1. Computer Software
- 2. Standards for Compilers
- 3. Analysis of New ADP Products
- 4. Early Information on ADP Procurements
- 5. Standards Enforcement

In each case, I will state your recommendation as I understand it from the draft proceedings and then indicate our initial reactions to it.

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#### COMPUTER SOFTWARE

"NBS should provide technical support to GSA in the operation of the software exchange program."

A government-wide index of sharable programs is an NBS responsibility under the OMB Policy Guidance for the Brooks Act, and now has come to fruition through the Software Summary Form FIPS PUB 30, developed by NBS and FIPS Task Group 14 (Documentation for Information Processing Systems). GSA has worked effectively with us, by agreeing to take on the day-to-day operational tasks and by promulgating this year the necessary FPMR amendment to assure that sharable programs are documented and reported. continue to advise GSA on the operational aspects and to develop further plans and documentation standards to support improvements of the exchange.

However, as a cautionary note, based upon the past experience of NASA's COSMIC and NTIS, there has been very little evidence of the value of software exchange even though GAO and others frequently cite the potential needs and benefits for such sharing. Accordingly, I feel that we (NBS) should closely follow the GSA sharing program to determine if software is a sharable resource and be able to separate facts from myths. We should, in cooperation with GSA, begin to provide for the collection of pertinent facts concerning the software exchange program.

You have further recommended to GSA that the ADP fund be used to validate and maintain a small number of programs of wide interest. Indeed, this may be the most expeditious avenue to obtain the resources for NBS to carry out these responsibilities as directed by the OMB Guidance for the Brooks Act. I believe that two priority areas to pursue in this way would be data base management software and data element directory software. We

Approved For Release 2002/01/11: CIA-RDP84-00933R000300200007-2 have already performed the functional analyses that are the essential first step toward the validation routines.

"NBS should develop standards and quidelines to facilitate sharing of software among agencies."

Improved interchange of software and data has always been a major goal of the FIPS program. Standardization of programming languages, software documentation, and data files are involved, and you have made specific recommendations in these areas that I will discuss later. There is no lack of ideas in other areas that need much more work that we presently have resources to carry out. For instance, the need for standard user and network protocols is among those we have identified in the past and are now pursuing, but only in the minimal scope that our present resources allow. A specific identification of the impact and urgency of these needs would be helpful support this this group might provide.

## "Develop standards for the documentation of software."

A comprehensive guideline for software documentation, FIPS PUB 38, has been published by NBS this year and with further experience and refinement can serve as the basis for Federal standards. The effort of the FIPS Task Group on Documentation is continuing, with the current goal of extending the present software documentation guideline to meet other documentation needs in the software life cycle.

#### "Develop standards for the design of portable software."

The issue of software design for portability certainly requires further study and definition of feasible standards. You can see that application—specific standards are involved, e.g., standard algorithms for computing mathematical functions or standard functional modules for payroll packages.

The user community must be involved directly in these standards, in order to

mental in progress in those applications areas where the concerned user community has organized itself to effectively use standards assistance. For example, the medical community has worked with NBS on selected standards for their needs (MUMPS). Certainly, the lack of cohesion and concerted action among users is a major hindrance to overall progress.

"There should be a recognized, permanently staffed central agency to coordinate and promote software sharing among agencies."

agency to accomplish the goal as implied here. We need more information exchange about sharable resources and successful applications: this should be vigorously pursued. There should also be increased effort to identify common needs that would support government-wide contract arrangements for use of selected packages, such as data base management packages and software production tools. But an agency decision to use an existing software system for a new application rather than develop new software requires a complex cost-benefit analysis.

Undoubtedly there also will be some compromise in the functional specifications. This analysis and decision making is best accomplished by the using agency; but the general intent of this recommendation deserves further review. We need more refined ideas about the role and authorities of the central agency. As an information channel, it is feasible and desirable; as a central design authority on agency applications, it is prohibited by the Brooks Act and also is of dubious feasibility.

### STANDARDS FOR COMPILERS

"NBS should collaborate with GSA on a plan to require vendors to restrict the use of standard assembly language supersets of extensions to compiler capabilities, rather than through changes to source programs."

We interpret this to mean you recommend that Federal agencies should be restricted from the use of vendor supplied compilers that represent the Federal standard with non-standard extensions.

We cannot accept this view without some qualification. For instance, vendor extensions beyond a current standard are the only way to gain experience on major new capabilities needed in the future standard language. We already strongly need language extensions to interface with data management systems, to provide debugging aids, to assist in program documentation, etc. Thus, a Federal standard which prohibited any extensions would freeze Federal users into the current state of the art, and prevent them from effectively using the exciting capabilities of networks, micro-processors, and integrated software sytems. At the same time, we must agree also that some vendor extensions are trivial, serving only as "syntactic sugar" to make a sale to the undiscerning user. Rather than spend extensive resources reviewing every compiler for the latter, it is better to have a standard tool which restricts use of these useless features in day-to-day programming. new COBOL standard, FIPS 21-1, provides this tool in the flagging requirement that NBS has added beyond the national standard. We have developed separate analyzers for FORTRAN which can perform the same function, and have a similar effort underway for COBOL. No new effort seems to be required to fulfill this recommendation.

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#### ANALYSIS OF NEW ADP PRODUCTS

"NBS should be provided funding for analysis and dissemination of information on new ADP products and services."

We believe our role relative to this recommendation is to provide the technical basis to other agencies to evaluate new products and services in the context of their own application. In fact, NBS has been doing this on an ad hoc basis to the extent that we felt that it was possible. We need resources to do it on a much larger scale. Until there are resources for a comprehensive program, we cannot initiate analyses of new ADP products and services with our directly appropriated funds. Let me cite one specific example of how we have been responsive in this area to the extent resources have permitted:

Our FIPS Task Group 21, Interface Standards and Multivendor Installations, is considering various aspects of an information service on hardware and software components that are acquired for Federal use through the systematic filing of product reports prepared by the buying agencies. The legal aspects of this type of service are being addressed due to the sensitive nature of the information involved and its availability under the provisions of the Freedom of Information Act.

#### EARLY INFORMATION ON ADP PROCUREMENTS

"NBS is a possible source of independent opinion for earlier information to Congress or new systems procurements."

I assume from the discussion as documented in the Airlie House proceedings that this recommendation is in reference to <u>technical</u> information concerning

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ADP procurements. It is interesting that one of the versions of the Senate Bill for the privacy protection, namely S.3418, had a provision similar to your recommendation. Specifically, prior to creation or substantial alteration of an information system, agencies would have submitted a report to the Privacy Protection Commission, to GSA, and to Congress. One inclusion in this report would have been "a statement of the hardware and software features which would be required to protect security of the system and confidentiality of information" and "the steps taken by the agency to acquire such features in their systems, including a description of consultations with representatives of the National Bureau of Standards."

As you know this requirement and NBS responsibility were not included in the Privacy Act of 1974. When specific technical questions as in the case of safeguards for privacy protection can be identified, this service of providing advice regarding ADP proposals to assist the Federal agencies, as well as being responsive to Congressional requests, does seem appropriate for NBS.

## STANDARDS ENFORCEMENT

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"There should be a concomitment effort on enforcement of standards including enforcement in procurements."

There has been long-standing confusion and uncertainty associated with the lack of any compliance mechanism in the implementation of Federal Information Processing Standards (FIPS) within the Federal government. This disquieting situation has existed since the first FIPS standard was issued in 1968. The Brooks Act, which established the FIPS program, does not address the issue of mandatory compliance or enforcement, nor do the OMB policy guidance papers or Executive Orders issued since 1965. Its

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only direct mention is in a letter dated December 15, 1966 from the Acting Director of OMB to the Secretary of Commerce in which NBS was directed to, among other things, "to the extent feasible and desirable, develop and recommend means for measuring compliance with Federal standards."

Since 1971, NBS has continually cited the confusion surrounding the lack of an explicit compliance mechanism as a significant factor in the degradation of the creditability and effectiveness of the FIPS program—a deficiency which impacts on both NBS and the Secretary of Commerce.

Individuals within OMB have in 1976 expressed to NBS the informal view that Executive Order 11717 dated May 9, 1973, gives the Department of Commerce all needed authority to enforce compliance or use, as appropriate, with its FIPS standards and guidelines. No formal assurance of this has been given; presently, by memorandum dated April 23, 1976, NBS has asked the staff of the DOC General Counsel to resolve whether the Secretary of Commerce has the legal authority informally intimated by OMB staff.

Certainly, any Federal standards program intended to meet legislated requirements, such as those of the Privacy Act of 1974, needs an accompanying explicit compliance and enforcement mechanism. NBS has been keenly aware of, and has many times documented, its concern over the resulting lack of effectiveness within the Federal government of its FIPS program.

When we have determined the legal authority of the Secretary of Commerce,
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NBS will either undertake the establishment of an adequate compliance mechanism
or we will formally notify OMB of the need for clarifying policy guidance.

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## CONCLUSION

Your recommendations are important to us as well as to the entire Federal ADP community. I want to emphasize the continued NBS support of your efforts and request your continuing advice to assist in the formulation of our program.